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terest in her surroundings." She ceases to play with companions, and shows neither affection nor jealousy when they are petted, but is timid and frightened without cause. Automatic restlessness, with tendency to rotation toward the right, also persists.

The general picture resembles quite closely that obtained by Ferrier, and leads Bianchi to the conclusion that the chains of nerve elements from sensory or motor terminations lead up to the nerve cells of the pre-frontal region as the apex of the personality. "The frontal lobes would thus sum up into a series the products of the sensori-motor regions, as well as the emotive states which accompany all perceptions, the fusion of which constitutes what has been called the psychical tone of the individual. Removal of the frontal lobes does not so much interfere with the perceptions taken singly as it does disintegrate the personality, and incapacitate for serializing groups of representations." "Fear is an immediate result of psychical disaggregation from defective sense of personality, and unbalanced perception and judgment." Thus it becomes a characteristic phenomenon.

If so simple an observation as the transit of a star across the spider line needs correction for "personal equation," what shall we say of observations as complicated as the above, extending over days, weeks and months? At best we can place these observations beside those of Groslik, and making due allowance for personal equations of insoluble terms of complexity, they may both be true to the facts and still leave many more facts unobserved and unrecorded.

It must be remembered also that Schaefer and Horsley obtained results diametrically opposed to those of Ferrier and Bianchi. Their method consisted in making the excision of the pre-frontal lobes, leaving the excised portions *in situ* and thus escaping pressure changes in the skull. Their trick monkeys were as active and intelligent after as before the operation, and their method of operation, it would seem, has much in its favor.

C. F. H.

Defective Development of the Cerebellum of a Puppy. J. S. RISIEN RUSSELL. Brain, LXXII, pp. 522-30, 5 Figs. London, 1895.

An entire litter of puppies from normal parents show such marked symptoms of incoordination and instability as to point to congenital defect of the cerebellum. One of the litter comes on this account into Dr. Russell's hands, and he is enabled to add to his important contributions to cerebellar anatomy and physiology. In walking, this puppy would fall in every direction equally, and when sitting or standing there was almost constant oscillation of the head and trunk. These phenomena indicated bilateral defect of the cerebellum, a diagnosis amply borne out by the autopsy findings. The cerebellum was found to be about three-fourths the normal size, and symmetrical. Section showed a peculiar condition of the white and gray matter, the molecular layer of the cortex being in many parts much thinner than normal, giving the folia a shrunken appearance, while in a few places it was three or four times its normal thickness. The great defect, however, was found in the Purkinje cells. In large parts of the cerebellum these cells were completely absent, in others one or two were to be seen here and there, while in a few places irregular groups or clusters of these cells were to be seen, the outer margin of the cluster being at the junction of the granular and molecular layers, while the cells invaded the granular layer to a considerable extent.

Great variations in shape and size also occur among the Purkinje cells. Their extreme paucity in the hemispheres and more nearly normal relations in the vermis are also a point of importance.

All other structures at higher levels, cerebral cortex, optic thalamus, red nucleus; and at lower levels, medulla, inferior olives, spinal cord, were apparently normal in every respect. The dentate nuclei were also normal.

In Russell's cat with defective cerebellum, a review of which was given in the last number of this JOURNAL, the hemisphere and dentate nucleus of one side were defective, especially the dentate nucleus, which was represented by only a few scattering cells. The inferior olive body of the opposite side was absent as well. This difference would indicate, as Russell remarks, with almost the definiteness of an experimental extirpation, that the cells of Purkinje in the cerebellar cortex had little relation with the olive body, while the dentate nucleus is closely associated with it. As pointing to the functions of the cerebellar cortex itself, therefore, without complications with centres at lower or higher levels, this case gives the best evidence that we have at present. C. F. H.

Studies on the Lesions Produced by the Action of Certain Poisons on the Cortical Nerve Cell.—I. Alcohol. HENRY J. BERKLEY. Brain, LXXII, 473-96, 17 Figs.

The animals used were rabbits, to which pure alcohol had been given for a considerable time, generally several months. These were compared with similar preparations from normal animals. The chief results are confirmatory of the findings of Andriezen. The blood vessels are found somewhat altered, the smallest arteries being "irregularly shrunken, at intervals almost botryoidal in appearance." This is not a constant phenomenon. The nerve cells, about one in three, are decreased in size, the nuclei appear a little irregular and shrunken, and the nucleolus especially, instead of being spherical and sharply defined, is much enlarged and very irregular in outline. By a modification of the Golgi method applicable to material already hardened in Müller's fluid, an alteration of the dendritic processes of the cortical cells in the cerebrum and cerebellum (Purkinje cells) is made out, resembling those described by Andriezen. The "contact gemmules" are lost and the processes become irregularly swollen. Berkley finds no alterations of the neuron. The affection of the dendron is the most striking alteration, and it is not claimed to be characteristic for alcohol poisoning.

C. F. H.

Einige Hypothesen über den anatomischen Mechanismus der Ideenbildung, der Association und der Aufmerksamkeit. S. RAMON Y CAJAL. Archiv für Anatomie und Entwicklungsgeschichte, herausgegeben von His. 1895, 4th-6th Heft.

The Spaniard of Barcelona, of such world-wide reputation, has with perfect right ventured over the line of strict anatomy into the provinces of psychology. The invasion is a welcome one. Such scientific incursions are like that of the spies into Canaan—they bring back rich and exceedingly good fruit. The first part of the discussion deals with the question, "*Has the individual perception one or several nerve cells for underlying basis?*" The recent investigations into the structure of the nervous system all demonstrate that many, very many, cells and fibres are engaged in the slightest sensation. From the sense organ to the cortex there is a well